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EXAMINER

TRAN, ELLEN C

ART UNIT PAPER NUMBER

2134

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/539,421

Applicant(s)

MITSUI, YASUHIRO

Examiner

Ellen C Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-93 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-93 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


NORMAN M. WRIGHT
PRIMARY EXAMINER

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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DETAILED ACTION

1. This action is responsive to communication: response filed on 20 May 2004, with an original application filing date of 30 March 2000 with a foreign priority date of 30 August 1999. Claims 34-63 have been amended and claims 64-93 have been added.
2. Claims 1-33 have been canceled.
3. Claims 34-93 are currently pending in this application. Claims 34, 35, 43, 44, 49, 50, 52, 53, 58, 59, 61, 62, 64 and 65 are independent claims.

Claim Objections

4. Claim 50 objected to because of the following informalities: The word "desired" is misspelled on page 6 of the amendment it reads "deisred". Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. **Claims 34, 64, 66, 67, 90, and 91** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mintzer et al. U.S. Patent No. 5,875,249 (hereinafter '249) in further view of Wong U.S. Patent No. 6,504,941 (hereinafter '941).

As to independent claim 34, “An image processing system comprising: an image providing apparatus” and “and providing said image file, in which said digital watermark is embedded based on said location information and an image utilizing apparatus which extracts said digital watermark from said image file provided by said image providing apparatus based on said location information” is taught in ‘249 col. 3, lines 27-38 “The present invention relates to a system and a method to verify an image through an “invisible watermark” that is stamped onto an image for image content verification ... The system consists of a stamping process that embeds digital information, called stamping information, into a source image based upon a defined mapping process to produce a stamped image. The mapping process is identified by a decoding “key” which allows a user to decode the stamping information from the stamped image, and this key is called a verification key. The system also includes a verification process that extracts stamping information from a stamped source image based upon the mapping process identified by the verification key ... Finally, the stamping information can be displayed to show the proper ownership of an image which is stamped”;

the following is not taught in ‘249 however ‘941 teaches

“which defines a location information indicating a plurality of regions in an image file for embedding a digital watermark in a desired region among the plurality of region” in ‘941 col. 4, lines 51-54 “wherein the output of the means for combining is a combined image block; and a means for inserting 126 the combined image block (C.sub.r) into the modified image block X.sub.r, wherein the means for

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inserting 126 the combined image block (C.sub.r) into the modified image block X.sub.r is electrically coupled to the means for modifying 110 at least one predetermined bit of the image block”;

“and verifies whether a data in said part of a region, in which said digital watermark is embedded, has been tampered” in ‘941 col. lines 8 lines 41-49 “After we have obtained the extracted watermark, the extracted watermark can be compared (visually, via a computer image comparison program, etc.) to an appropriate watermark. For example, the appropriate watermark may be an image transmitted to the receiver at an earlier time for watermark comparison purposes. If there is deviation between the two watermarks, then the locations of the deviations indicate the regions within the watermarked image that have been changed”;

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of ‘249 that explain how watermarks are inserted and extracted into an image to include authentication method. One of ordinary skill in the art would have been motivated to perform such a modification because a method is needed to determine if image has been modified. As indicated by ‘941 (see col. 2, lines 34 et seq.) “A method of invisible watermarking that can be used both for purposes of ownership verification and authentication, that can detect changes in pixel values as well as image size, and that may be used in public key or alternatively, secret key watermarking systems is needed”.

As to independent claim 64, “An image processing system comprising: an image providing apparatus which provides an image file, from which a digital watermark

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information can be extracted by using a watermark key that includes an authentication information which authenticates said image file provided by an valid provider” is taught in ‘249 col. 3, lines 27-38 “The present invention relates to a system and a method to verify an image through an "invisible watermark" that is stamped onto an image for image content verification ... The system consists of a stamping process that embeds digital information, called stamping information, into a source image based upon a defined mapping process to produce a stamped image. The mapping process is identified by a decoding "key" which allows a user to decode the stamping information from the stamped image, and this key is called a verification key. The system also includes a verification process that extracts stamping information from a stamped source image based upon the mapping process identified by the verification key ... Finally, the stamping information can be displayed to show the proper ownership of an image which is stamped”;

“and said watermark key of said image file; and an image utilizing apparatus which extracts said digital watermark information from said image file provided by said image providing apparatus using said watermark key provided by said image providing apparatus” is shown in ‘249 col. 3, lines 44-50 “into a source image based upon a defined mapping process to produce a stamped image. The mapping process is identified by a decoding "key" which allows a user to decode the stamping information from the stamped image, and this key is called a verification key. The system also includes a verification process that extracts stamping information from a stamped source image based upon the mapping process identified by the verification key”;

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“verifies whether said watermark key has been tampered or not using said authentication information in said watermark key, verifies whether said image file has been tampered or not using said verified watermark key, and displays said verified image file” is disclosed in ‘249 col. 4, lines 53-61 “This extraction begins by computing the watermark extraction function, $WX(*)$, from the verification key, and applies the function to every pixel $SS(I,J)$ to produce the watermark pixel $EW(I,J)$. The watermark extraction process is repeated until every pixel in the stamped-source image has been processed. The result is an extracted watermark image. This image can be compared visually or numerically with the original watermark image to check for alterations and discrepancies in the stamped image”;

“wherein said image providing apparatus defines a location information indicating a plurality of regions in said image file for embedding said digital watermark in a desired region among the plurality of regions in said image file, and provides said image file in which said digital watermark is embedded based on said location information, and said image utilizing apparatus extracts said digital watermark from said image file provided by said image providing apparatus based on said location information” is taught in ‘941 col. 5, lines 12 through col. 6, line 26 “The input to the means for setting a predetermined bit to a predetermined value is a block original input image ... In the preferred embodiment the image $X_{m,n}$ is partitioned into blocks or $I \times J$ may be formed by tiling $a_{m,n}$, i.e., periodically replicating $a_{m,n}$, to the desired size ”

“and verifies whether a data in said desired region, in which said digital watermark is embedded, has been tampered” is shown in ‘941 col. 8, lines 41-44 “After we have obtained the extracted watermark, the extracted watermark can be compared (visually, via computer

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image comparison program, etc.) to an appropriate watermark. For example, the appropriate watermark may be an image transmitted to the receiver at an earlier for watermark comparison purpose. If there is deviation between the two watermarks, then the locations of the deviations indicate the regions within the watermarked image that have been changed”.

As to dependent claim 66, “wherein a density of said digital watermark is adjusted to a quality of said image file” is taught in ‘941 col. 5, lines 11-60 “In the preferred embodiment the original input image $X^{m,n}$ is a gray scale image ... Although the embodiment shown in FIG. 1A is preferred, other alternative methodologies for modifying the image block X_r is available”

As to dependent claim 67, “wherein a data amount of said digital watermark for a character is smaller than one for an other type of information in said image file” is shown in ‘941 col. 5, lines 11-60 “In the preferred embodiment the original input image $X^{m,n}$ is a gray scale image ... Although the embodiment shown in FIG. 1A is preferred, other alternative methodologies for modifying the image block X_r is available”

As to dependent claims 90 and 91, these claims hold the same limitations as cited in claims above are therefore rejected using the same rationale.

7. **Claim 35-63, 65, 68-91, 92, and 93** are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘249 in further view of ‘941, further in view of Stefik U.S. Patent No. 6,233,684 B1 (hereinafter ‘684).

As to independent claim 35, “An image processing system comprising: an image providing apparatus” and “and providing said image file, in which said digital watermark is embedded” is taught in ‘249 col. 3, lines 27-38 “The present

invention relates to a system and a method to verify an image through an "invisible watermark" that is stamped onto an image for image content verification ... The system consists of a stamping process that embeds digital information, called stamping information, into a source image based upon a defined mapping process to produce a stamped image. The mapping process is identified by a decoding "key" which allows a user to decode the stamping information from the stamped image, and this key is called a verification key. The system also includes a verification process that extracts stamping information from a stamped source image based upon the mapping process identified by the verification key ... Finally, the stamping information can be displayed to show the proper ownership of an image which is stamped";

"for indicating a plurality of regions in an image file and provides said image file in which a digital watermark is embedded in a desired region among the plurality of regions based on said format;" in '941 col. 4, lines 51-54 "wherein the output of the means for combining is a combined image block; and a means for inserting 126 the combined image block (C.sub.r) into the modified image block X.sub.r, wherein the means for inserting 126 the combined image block (C.sub.r) into the modified image block X.sub.r is electrically coupled to the means for modifying 110 at least one predetermined bit of the image block";
the is not taught in the combination of teaching from '249 and '941:

"which recognizes a format" and **"which recognizes said format"** however is taught in '684 col. 1, lines 54-65 "The term fingerprint is sometimes used in contrast with watermarks to refer to marks that carry information about the end user or

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rendering event rather than the document or publisher. These marks are called "fingerprints" because they can be used to trace the source of a copy back to a person or computer that rendered the original. The same technologies and kinds of marks can be used to carry both watermark and fingerprint information. In practice, it is not only possible but often desirable and convenient to combine both kinds of information--for watermarks and fingerprints--in a single mark".

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of '249 and '941 that explain how watermarks are inserted and extracted into an image in a specific location to include a method of determining the provider of the information. One of ordinary skill in the art would have been motivated to perform such a modification because this information helps protect digital works from being copied or unauthorized alterations. As indicated by '684 (see col. 4, lines 52 et seq.) "A trusted rendering device for minimizing the risk of unauthorized copying of rendered digital works is described. The risk of unauthorized copying of digital documents comes from three main sources: interception of digital copies when they are transmitted (e.g., by wiretapping or packet snooping); unauthorized use and rendering of digital copies remotely stored, and unauthorized copying of a rendered digital work. The design of trusted rendering devices described herein addresses all three risks".

"and verifies whether a data in said desired region in said image file, in which digital watermark is embedded, has been tampered" is shown in '249 col. 4, lines 53-61 "This extraction begins by computing the watermark extraction function,

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WX(*), from the verification key, and applies the function to every pixel SS(I,J) to produce the watermark pixel EW(I,J). The watermark extraction process is repeated until every pixel in the stamped-source image has been processed. The result is an extracted watermark image. This image can be compared visually or numerically with the original watermark image to check for alterations and discrepancies in the stamped image”.

As to dependent claim 36, “wherein said image providing apparatus provides said image file in which a different kind of said digital watermark is embedded in a different region in said image file” is shown in ‘684 col. 8, lines 41-64 “A key concept in governing sale, distribution, and use of digital works is that publishers can assign “rights” to works that specify the terms and conditions of use. These rights are expressed in a rights language as described in the aforementioned U.S. Pat. No. 5,629,980. The currently preferred grammar is provided herein in Appendix A. It is advantageous to specify watermark information within a rendering or play right within the grammar for a number of reasons. First, specification in this manner is technology independent. So different watermarking technologies may be used or changed without altering the digital document. Second, multiple watermarking technologies may be applied to the same digital work, e.g. a visible watermarking technology and an invisible watermarking technology. So if the visible watermark is removed, the invisible one may remain. Third, the watermark information to be placed on the digital work can be associated with the rendering event, rather than the distribution event. Fourth, the watermark information can be extended

to include the entire distribution chain of the digital work. Fifth, security and watermarking capabilities of a rendering system may be specified as a condition of rendering. This will further insure the trusted rendering of the digital work”.

As to dependent claim 37, “wherein said image providing apparatus provides said image file in which P a different kind of said digital watermark is embedded according to an image quality in each region where said digital watermark is embedded” is disclosed in ‘941 col. 2 lines 29-33 “The watermark insertion procedure computes a hash function of a modified image block, a key and various image parameters, and then combines the hashed output with a block of the watermark bitmap, resulting in a combined image block”.

As to dependent claim 38, “wherein: said location information for embedding a digital watermark includes a location information of a region for displaying a specific information necessary for detecting a tamper” is taught in ‘941 col. 8 lines 41-49 “After we have obtained the extracted watermark, the extracted watermark can be compared (visually, via a computer image comparison program, etc.) to an appropriate watermark. For example, the appropriate watermark may be an image transmitted to the receiver at an earlier time for watermark comparison purposes. If there is deviation between the two watermarks, then the locations of the deviations indicate the regions within the watermarked image that have been changed”;

“said image utilizing apparatus extracts said digital watermark with said message digest from said image file based on said location information” is shown in ‘941 col. 8, lines 25-29 “extracting at least a predetermined bit from the

watermarked image (step 254); calculating a digest of the values using a cryptographic hash function (step 256); combining the hashed output with the image block E.sub.r”;

“generates a corresponding message digest using said specific information in said provided image file, and detects tampering with said image file by comparing said extracted message digest With said corresponding generated message digest” is disclosed in ‘941 col. 9, lines 39-40 “That is, the digest generated from both image blocks must be identical”.

As to dependent claim 39, this claim holds the same limitations as cited in claims above and is therefore rejected using the same rationale.

As to dependent claim 40, “wherein said region for embedding said message digest corresponding to said specific information is independent of said region for displaying said specific information necessary for detecting said tamper” is disclosed in ‘941 col. 2 lines 21-29 “The present invention provides an invisible digital watermarking technique that can serve the two purposes of ownership verification and authentication, that can detect changes in pixel values as well as image size, and that may be used in public key or alternatively, secret key watermarking systems. The present invention includes a watermark insertion procedure used by the image owner and a corresponding extraction procedure used by the receiver of the image”.

As to dependent claim 41 “wherein: said location information is registered in both of said image providing apparatus and said image utilizing apparatus said image providing apparatus embeds said digital watermark in said image file

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based on said registered location information; and said image utilizing apparatus extracts said digital watermark from said image file based on said registered location information" is taught in '941 col. 8, lines 44-49 "For example, the appropriate watermark may be an image transmitted to the receiver at an earlier time for watermark comparison purposes. If there is deviation between the two watermarks, then the locations of the deviations indicate the regions within the watermarked image that have been changed".

As to independent claims 43, 44, 49, 50, 58, 61, 62, and 65 these claims hold the same limitations as cited in claims above are therefore rejected using the same rationale.

As to dependent claims 42, 45-48, 51, 54-57, 60, 63, 68-89, 92, and 93 these claims hold the same limitations as cited in claims above are therefore rejected using the same rationale.

As to independent claims 52, 53, and 59, "A recording medium storing a program to be executed by a computer, said program comprising" is taught in '941 col. 12, lines 29-33 "Alternatively, in another embodiment, the implementation of the block diagram shown in FIG. 1A could be implemented entirely in software, wherein the software is stored on a computer readable media and is adapted to running on a computer system" the remainder or the text in these claims hold the same limitations as cited above and is therefore rejected.

Response to Arguments

8. Applicant's arguments/remarks starting on page 15, the applicant has canceled claims 1-33 making any argument affecting these claims moot.

As to applicant's statement starting on page 15 "In an exemplary embodiment of the invention ... may advantageously process an image within a short time and at a small cost" these affects are not claimed in a manner that they have relevance to the claimed invention.

Applicant's arguments on page 16, "Neither Mintzer nor Wong teach embedding a digital watermark in a desired region among the plurality of regions" the Office disagrees Wong teaches inserting the watermark into "partitioned blocks" this has the same meaning as "plurality of regions". In addition Wong teaches throughout desired region i.e. the user can select image size, algorithm, or modify image block, see Wong, '941 col. 5, lines 12 through col. 6, line 13 for a detailed explanation.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the


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statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen C Tran whose telephone number is (703) 305-8917. **"After mid-Oct, 2004, the examiner can be reach at (571) 272-3842"**. The examiner can normally be reached on 6:30 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory A Morse can be reached on (703) 308-4789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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